2018-04

Rethinking Combat Identification (CID)

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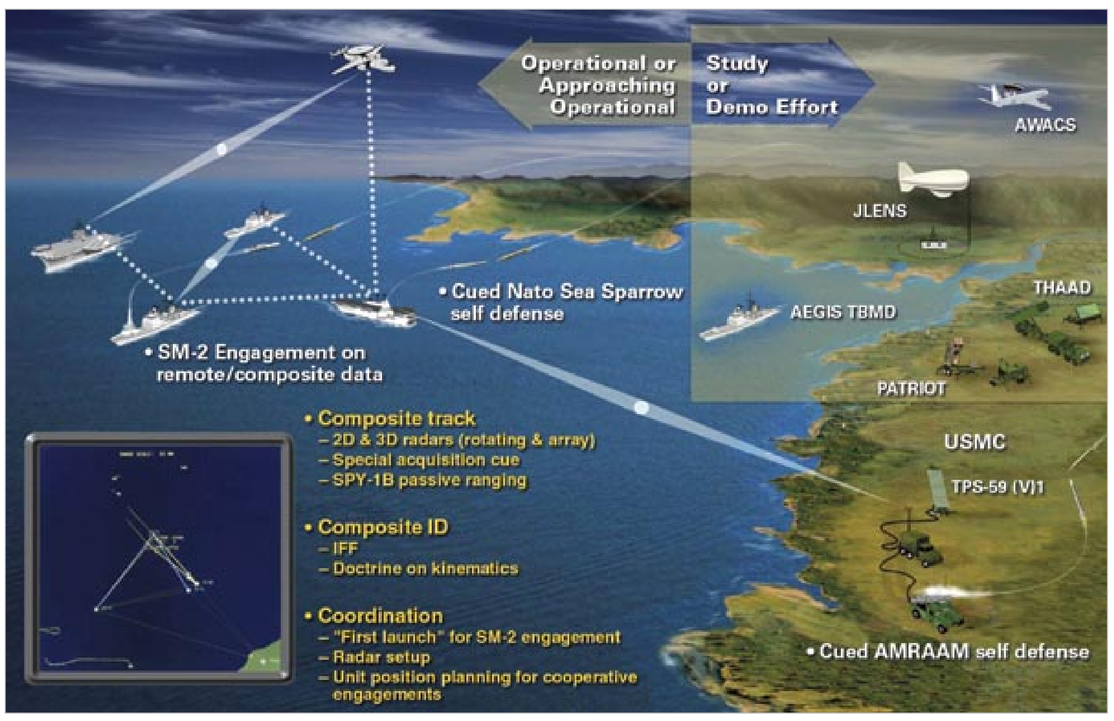
Background

- Discriminating between friends, foes, and neutrals has always been a challenge. Failure to identify correctly generates many negative consequences
- Sea-based units have constrained defense assets; therefore optimal allocation is desired
- While CID is crucial in all warfighting domain's, it is often most challenging in integrated air and missile defense (IAMD), because of contact speeds
- In today's multilateral conflicts, neutrals can become hostile rapidly; therefore, deriving track intent is desired

Sea-based Air Defense in Action



Cooperative Engagement Capability at Work

IAMD CID Details & Challenges

Details:

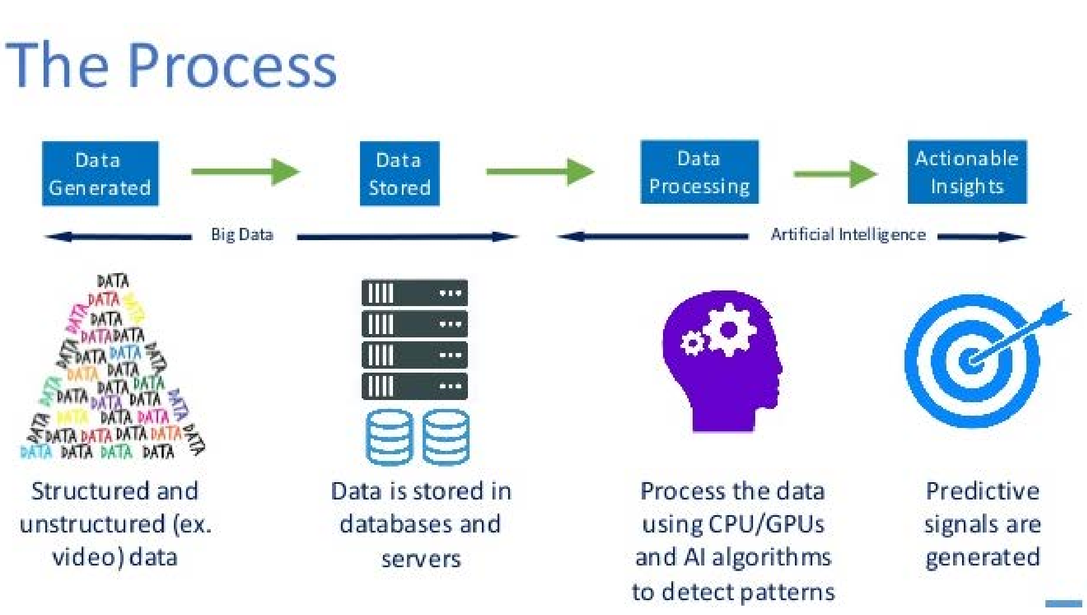
- Radar remains primary sensor for IAMD
- Enhanced by CEC and NIF-CA
- Complemented by Mode IV and IFF
- Additional corroborating sensors include ESM and NtM
- Operator's conscious pattern matching

Challenges:

- CID process is time consuming; requires real-time architectures
- Current techniques don't persist data
- Not all relevant data sources used
- Not leveraging emerging artificial intelligence capabilities
- CID process requires analyzing not only world (known-known) but develop anticipatory intelligence for possible unknown events of the future

CID Enhancement Approach

- Emphasis is on speed of transaction/analysis in support of operational tempo
- Ingest, analyze, and persist multi modal data in real time
- Design knowledge base (KB) for rapid assessment and enable advanced data techniques
- Apply machine and deep learning techniques to IAMD CID



General Example of Using Big Data and Artificial Intelligence

Findings and Next steps

- Found new ingest process that can accept multi modal data
- Uncovered data symbol approach that provides foundation for knowledge base
- Both approaches promote real time analysis
- Discovered AFRL project trying similar approach; collaborating now with them
- Wrote primer on AI for sponsor
- Seeking funding to build out model

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Topic Sponsor: N2N6F – Information Warfare, Warfare Integration

NRP Project ID: NPS-17-N194-B
Technical Report Title: Advanced Combat Identification Concept of Operations